Celanese
The chemistry inside innovation™

RITEFLEX® 677 - TPC

Description

Riteflex 677 is a thermoplastic polyester elastomer with nominal hardness of 77 shore D and high modulus.

Physical properties	Value	Unit	Test Standard
Density	**1270**	kg/m³	ISO 1183
Melt flow rate, MFR	**15**	g/10min	ISO 1133
MFR temperature	**240**	°C	ISO 1133
MFR load	**2.16**	kg	ISO 1133
Molding shrinkage, parallel	**1.8 - 2.2**	%	ISO 294-4, 2577
Molding shrinkage, normal	**1.7 - 2.2**	%	ISO 294-4, 2577

Mechanical properties	Value	Unit	Test Standard
Tensile modulus	**750**	MPa	ISO 527-2/1A
Tensile stress at yield, 50mm/min	**33**	MPa	ISO 527-2/1A
Tensile strain at yield, 50mm/min	**18**	%	ISO 527-2/1A
Tensile nominal strain at break, 50mm/min	**>50**	%	ISO 527-2/1A
Tensile stress at 50% strain, 50mm/min	**26**	MPa	ISO 527-2/1A
Tensile stress at break, 50mm/min	**42**	MPa	ISO 527-2/1A
Tensile strain at break, 50mm/min	**>300**	%	ISO 527-2/1A
Flexural modulus, 23°C	**670**	MPa	ISO 178
Flexural modulus, -40°C	**2500**	MPa	ISO 178
Flexural strength, 23°C	**30**	MPa	ISO 178
Flexural stress at 3.5% strain	**23**	MPa	ISO 178
Charpy impact strength, 23°C	**71**	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	**4.5**	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	**9.4**	kJ/m²	ISO 179/1eA
Izod impact notched, 23°C	**8.5**	kJ/m²	ISO 180/1A
Izod impact notched, -40°C	**4.7**	kJ/m²	ISO 180/1A
Izod impact unnotched, 23°C	**NB**	kJ/m²	ISO 180/1U
Tensile notched impact strength, +23°C	**9.3**	kJ/m²	ISO 8256/1
Bayshore resilience	**40**	%	ASTM D 2632

Mechanical properties (TPE)	Value	Unit	Test Standard
Tensile stress at 5% strain, 1BA	**32**	MPa	ISO 527-1, -2
Tensile stress at 10% strain, 1BA	**36**	MPa	ISO 527-1, -2
Tensile stress at 50% strain, 1BA	**26**	MPa	ISO 527-1, -2
Shore D hardness, 15s	**75**	-	ISO 868
Tear strength, Die C/parallel	**250**	kN/m	ISO 34-1

Thermal properties	Value	Unit	Test Standard
Melting temperature, 10°C/min	**218**	°C	ISO 11357-1/-3
DTUL at 1.8 MPa	**51**	°C	ISO 75-1, -2
DTUL at 0.45 MPa	**109**	°C	ISO 75-1, -2
Vicat softening temperature, 50°C/h 10N	**213**	°C	ISO 306
Coeff. of linear therm expansion, parallel	**1.4**	E-4/°C	ISO 11359-2
Flammability at thickness h	**HB**	class	UL 94
thickness tested (h)	**1.50**	mm	UL 94

Electrical properties	Value	Unit	Test Standard
Relative permittivity, 1MHz	**3.3**	-	IEC 60250
Dissipation factor, 1MHz	**400**	E-4	IEC 60250
Volume resistivity	**4E14**	Ohm*m	IEC 60093
Surface resistivity	**2E17**	Ohm	IEC 60093
Electric strength	**16**	kV/mm	IEC 60243-1
Comparative tracking index	**PLC 0**	-	IEC 60112

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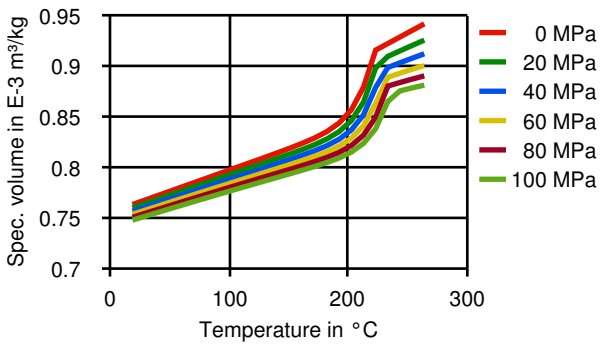
Diagrams

Moldflow Specific volume-temperature (pvT)



Typical injection moulding processing conditions

Pre Drying	Value	Unit	Test Standard
Necessary low maximum residual moisture content	**0.05**	%	-
Drying time	**4**	h	-
Drying temperature	**100 - 110**	°C	-
Temperature	**Value**	**Unit**	**Test Standard**
Hopper temperature	**20 - 50**	°C	-
Feeding zone temperature	**230 - 240**	°C	-
Zone1 temperature	**230 - 240**	°C	-
Zone2 temperature	**235 - 250**	°C	-
Zone3 temperature	**235 - 250**	°C	-
Zone4 temperature	**240 - 260**	°C	-
Nozzle temperature	**240 - 260**	°C	-
Melt temperature	**235 - 265**	°C	-
Mold temperature	**20 - 55**	°C	-
Hot runner temperature	**235 - 260**	°C	-
Speed	**Value**	**Unit**	**Test Standard**
Injection speed	**medium-fast**	-	-

Other text information

Pre-drying

To avoid hydrolytic degradation during processing, Riteflex resins have to be dried to a moisture level equal to or less than 0.05%. Drying should be done in a dehumidifying hopper dryer capable of dewpoints <-40°F (-40°C) at 230°F (110°C) for 4 hours.

Longer pre-drying times/storage

For subsequent storage of the material in the dryer until processed (<= 60 h) it is necessary to lower the temperature to 100° C.

Injection molding

Rear Temperature 450-470(230-240) deg F (deg C)
Center Temperature 460-480(235-250) deg F (deg C)
Front Temperature 470-490(240-255) deg F (deg C)
Nozzle Temperature 480-490(250-255) deg F (deg C)
Melt Temperature 460-490(235-255) deg F (deg C)
Mold Temperature 100-200(40-95) deg F (deg C)
Back Pressure 0-50 psi
Screw Speed Medium
Injection Speed Fast

Injection speed, injection pressure and holding pressure have to be optimized to the individual article geometry. To avoid material degradation during processing low back pressure and minimum screw speed have to be used. Overheating of the material has to be avoided, in particular for flame retardant grades. Up to 25% clean and dry regrind may be used.

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Characteristics

Product Categories	Processing
Unfilled	Injection molding

General Disclaimer

NOTICE TO USERS: Values shown are based on testing of laboratory test specimens and represent data that fall within the standard range of properties for natural material. These values alone do not represent a sufficient basis for any part design and are not intended for use in establishing maximum, minimum, or ranges of values for specification purposes. Colorants or other additives may cause significant variations in data values. Properties of molded parts can be influenced by a wide variety of factors including, but not limited to, material selection, additives, part design, processing conditions and environmental exposure. Any determination of the suitability of a particular material and part design for any use contemplated by the users and the manner of such use is the sole responsibility of the users, who must assure themselves that the material as subsequently processed meets the needs of their particular product or use. To the best of our knowledge, the information contained in this publication is accurate; however, we do not assume any liability whatsoever for the accuracy and completeness of such information. The information contained in this publication should not be construed as a promise or guarantee of specific properties of our products. It is the sole responsibility of the users to investigate whether any existing patents are infringed by the use of the materials mentioned in this publication. Moreover, there is a need to reduce human exposure to many materials to the lowest practical limits in view of possible adverse effects. To the extent that any hazards may have been mentioned in this publication, we neither suggest nor guarantee that such hazards are the only ones that exist. We recommend that persons intending to rely on any recommendation or to use any equipment, processing technique or material mentioned in this publication should satisfy themselves that they can meet all applicable safety and health standards. We strongly recommend that users seek and adhere to the manufacturer's current instructions for handling each material they use, and entrust the handling of such material to adequately trained personnel only. Please call the telephone numbers listed for additional technical information. Call Customer Services for the appropriate Materials Safety Data Sheets (MSDS) before attempting to process our products. The products mentioned herein are not intended for use in medical or dental implants.

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